

Community Benefits & Impacts

System analyses will be conducted to quantify SATS benefits and impacts - in terms of enhanced accessibility, mobility, economic opportunity, environmental compatibility and quality-of-life for urban, suburban and rural communities.

Community Benefits

- Evaluation metrics for cost/benefit analysis
- Economic benefit measurement tools
- Cultural impacts resulting from introduction of affordable and accessible personal air transport
- Educational tools for communicating national economic and social implications
- Emergency services benefits
- Tourism benefits

Environmental Compatibility

- Environmental compatibility expectations for a fully implemented SATS
- Community acceptance and preparation for increased aircraft traffic, noise, and emissions
- Enroute noise compatibility



Travel Affordability Assessment:

Cost/benefit studies will be carried out to assess SATS affordability

- both for public travel and for commercial access



Current and Latent Market Projections

- SATS market acceptance projections, both current and latent, including likely chronology and demographics
- Price thresholds for SATS technology
- Potential for e-commerce delivery

Airport Access and Multi-Modal Issues

- Viability of SATS as an alternative to other travel modes
- Groundside connections, capacity, and possibilities
 - Access road connections and capacity
 - Auto Parking capacity
 - Multi-modal possibilities
 - Rail access potential
 - Dedicated bus service possibility
- Additional external service needs for a SATS patron on a full trip (beyond the aircraft portion of the trip)



Infrastructure Analysis:

Transportation system studies will be done to examine SATS infrastructure affordability — as an option for national transportation system investment.

Airport and Local Airspace Design

- Current airport design compatibility for projected SATS usage rates



- Runway, taxiway, ramp, & hangar capacity limitations with existing design standards
- FAR Part 77 relevancy to a GPS approach environment
- Potential for moving from IFR geometry to UFR geometry



- ➔ Airport categories that might benefit most
- ➔ Real estate requirement expectations for new airspace requisites
- ➔ Reasonable expected reduction in land purchase, fee, or easement to protect airspace

Airspace Architecture and Procedures

- Enroute airspace issues with ADS-B or “freeflight”
- Navaid planning consistency with new technologies
- GPS technology reliability for everyday SATS application
- WAAS/LAAS integration ability and efficiency
- Approach light requirements for GPS SATS IMC regime
- DIF demonstration using mobile DIFS
- Other terminal area issues caused by automation

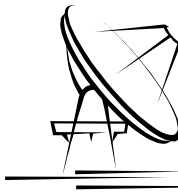


Safety and Ease of Operation Assessment:

Flight and simulator experiments will be conducted to measure human capabilities to safely and easily operate in the future SATS, including operating during adverse weather and dealing with emergency situations.

Human Factors

- SATS cockpit crew/machine human factors
- IMC testing of SATS display equipped aircraft and embedded simulators
- Ability to overcome public aversion to bad weather by implementation of a highly automated SATS



- Weather service format improvement possibilities to enhance “non-pilot” understanding
- Training syllabus requirements for largely “non-pilot” population to become comfortable with SATS equipment

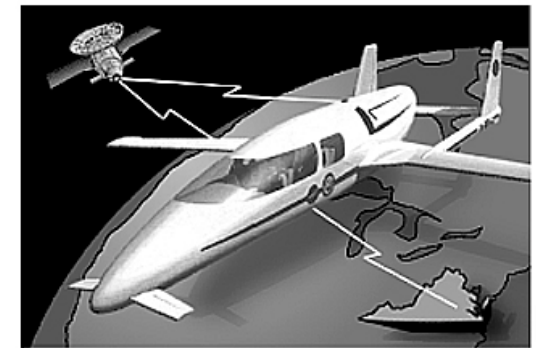
SATS Patron Services

- Commercial Information Services (CIS) elements required to become a SATS participant
- Application of high-speed wireless services for access to SATS information
- Consideration of SATS vehicles as part of a Wide Area Network (WAN) “Airborne Internet”

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**VIRGINIA
SATSLab**

*Proving Ground for
SATS Technology*

**Goal: Provide “Proof of Concept”
Demonstration for SATS by 2005**

- ➔ Community Benefits
- ➔ Travel Affordability
- ➔ Infrastructure Analysis
- ➔ Safety and Ease of Operation



Program Partners:

The program is a partnership between:

- **NASA Langley Research Center**
- **Virginia Department of Aviation**
- **Virginia Space Grant Consortium**
- **George Mason University**
- **Hampton University**
- **Old Dominion University**
- **Virginia Tech**
- **VA Center for Innovative Technology**